JOYSTICK CONVERTER APPARATUS

BACKGROUND OF THE INVENTION

1. Field of the Invention

This invention pertains generally to joystick controls for computers, and more particularly to a joystick attachment for computer keyboard cursor or arrow keys which employs a central control rod coupled to a plurality of leg segments which interface with selected keys on the keyboard.

2. Description of the Background Art

Computer keyboards generally include a plurality of arrow or cursor control keys which are typically arranged in an array in a portion of the keyboard. The arrow keys are used for directional control and/or cursor movement in computer games, word processing programs, computer menus, software editing, and other applications. The most common arrow key array pattern used on computer keyboards comprises a LEFT arrow key, a DOWN arrow key, and a RIGHT arrow key which are adjacent to each other in a co-linear arrangement, and an UP arrow key positioned above the Down arrow key, to provide an inverted "T"-shaped layout. This key array is typically included in the lower right portion of the computer keyboard.

Direct manipulation of arrow keys tends to provide relatively slow cursor movement and directional control when playing computer games. Thus, various adaptive accessories have been developed for actuation of the arrow keys on computer keyboards. However, many keyboards are configured such that the arrow keys are immediately adjacent to each other without any hard keyboard surface between the arrow keys, and thus devices wherein a base rests on a keyboard surface by narrow walls cannot be used. Devices which use a clip, clamp or other bracket assembly to hold a control switch over the arrow keys are difficult and inconvenient to attach to and remove from computer keyboards. Such devices requiring a bracket assembly additionally tend to be unaesthetic and detract from the computer work environment. External joystick controls, "mouse" devices and tracking balls, which are used as alternatives to arrow keys, are relatively expensive and require mapping software to convert signals from the mouse or joystick controls to the equivalent keystrokes for the computer arrow keys.

Accordingly, there is a need for a joystick converter apparatus for use with arrow key arrays which does not require a solid keyboard surface between the arrow keys, which does not require the use of a clamp or bracket assembly to mount a joystick over the arrow keys, which is quick and simple to install and remove, and which is inexpensive. The present invention satisfies these needs, as well as others, and generally overcomes the deficiencies found in the background art.

SUMMARY OF THE INVENTION

The present invention comprises a joystick converter apparatus for use with computer keyboard arrow key arrays. The apparatus provides quick and accurate cursor movement or directional control with computer programs, and can be easily installed and removed as required without use of a support bracket. In general terms, the invention comprises a vertically oriented control rod or joystick, and first, second, third and fourth actuating means associated with the control rod for depressing keys, with three of the actuating means being aligned generally co-linear relative to each other. Means are provided for coupling two of the actuating means to two of the arrow keys, while the other two actuating means are positioned over and slightly above the two other arrow keys.

By way of example and not of limitation, there are generally first, second, third, and fourth key actuating means which are structured, configured and arranged to correspond respectively to the UP, RIGHT, LEFT and DOWN arrow keys in standard arrow key arrays on computer keyboards. The coupling means preferably comprises a fastening hook and pile fabric arrangement such as VELCRO®. The coupling means is preferably included with the first and fourth actuating means of the apparatus, with the first and fourth actuating means coupled to the UP and DOWN arrow keys respectively. The second and third actuating means are preferably positioned slightly above the RIGHT and LEFT arrow keys respectively. Means for preventing scratching of the arrow key surfaces such as rubber tips may be included on the second and third actuating means to prevent scratching of the key surfaces.

In a first embodiment of the invention, the actuating means comprises a substantially flat T-shaped plate which is structured and configured to generally cover a standard T-shaped arrow key array. The T-shaped plate includes first, second and third branches which comprise the first, second and third actuating means. A junction region between the branches comprises the fourth actuating means. VELCRO®-covered portions are included on the lower surfaces of first branch and junction region of the T-shaped plate and couple to the UP and DOWN arrow keys. Downwardly disposed nibs or protuberances are provided on the lower surfaces of the second and third branches, with the protuberances positioned over the RIGHT and LEFT arrow keys respectively, and slightly spaced apart from the RIGHT and LEFT arrow keys. The control rod or joystick is coupled to the upper surface of the T-shaped plate adjacent the first branch and the junction region.

In a second or alternative embodiment of the invention, the first, second, third and fourth actuating means comprise first, second, third, and fourth downwardly disposed branches or legs which are coupled to a lower end of the control rod. The first, second and third branches extend outward and downward from the control rod, while the fourth leg extends generally straight downward from the control rod, with the control rod positioned vertically co-linear with the fourth branch. The lower tips of the first and fourth branches are coupled to the UP and DOWN arrow keys respectively, while the lower tips of the second and third branches are positioned slightly above the RIGHT and LEFT arrow keys.

The invention is utilized by affixing, attaching, or coupling the first and fourth actuating means to the UP and DOWN arrow keys respectively of the arrow key array on a computer keyboard. When the first and fourth actuating means are thus coupled to the UP and DOWN arrow keys, the second and third actuating means are positioned over and slightly above the RIGHT and LEFT arrow keys respectively. By moving or tilting the control rod forward, pressure is applied by the first actuating means on the UP arrow key, thereby actuating the UP arrow key and providing corresponding cursor movement or directional change in computer programs. When the control rod is moved or tilted to the left, the second actuating means depresses the LEFT arrow key to provide cursor movement or directional change to the left. When the control rod is moved or tilted to the right, the third actuating means actuates the RIGHT arrow key to provide cursor movement or directional change to the right. When the control rod is moved or tilted back, the fourth actuating means contacts the DOWN arrow key, and causes corresponding downward cursor movement or directional change.